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**Gleason et al.**

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(54) **MAGNETIC ADD-ON LENSES WITH  
ALIGNMENT RIDGE**

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(52) **U.S. Cl.**  
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(58) **Field of Classification Search**  
USPC ..... 396/71, 133, 529; 348/360; 359/827  
See application file for complete search history.

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(57) **ABSTRACT**

A camera system includes a housing with an aperture and an alignment feature surrounding the aperture to define an optical axis extending through the aperture. A camera module is mounted inside the housing and engages the alignment feature to align the camera module with the optical axis. A lens assembly that may have a moveable element is included in the camera module. A voice coil motor may support the moveable element of the lens assembly. A plurality of magnets are arranged on the camera module adjacent to the alignment feature to retain a detachable lens on the housing and engage the alignment feature to align the detachable lens with the optical axis. The plurality of magnets may be further arranged to minimize interference with the voice coil motor and movement of the moveable element of the lens assembly.

**22 Claims, 5 Drawing Sheets**

